

Correlation between Site of Placenta and Umbilical Cord Hematocrit Value

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ABSTRACT

Background: Placenta Previa (PP) is characterized as the unusual implantation of placental tissue over or adjoining the inside cervical os. The commonness of PP is at around 5 for every 1000 pregnancies. It represents roughly 20% of all antepartum drain, front PP was seen as related with unfavorable maternal results including over the top blood misfortune, gigantic transfusion, placenta accreta and hysterectomy. **Objective:** The purpose of our study was to decide the connection between the site of placenta in pregnant women and the hematocrit (Hct) estimation of umbilical cord blood (CB) of the newborn. **Patient and method:** This case-control study was carried out at Obstetrics and Gynecology Department, Zagazig University Hospitals and El-Menshawey General Hospital in Tanta during the period from May 2018 to May 2019. The study included 32 pregnant women with various placental site. They were classified into two groups; group 1: women determined to have placenta previa as front or back placenta previa. Group II: women without placenta previa at a similar gestational age as (bunch II). Placenta position was classified as foremost, back and fundal placenta. **Results:** there was high huge distinction between hemoglobin levels when activity in the placenta previa gathering. Additionally, there was high distinction between the placenta previa gathering and the control group in respect to fetal haematocrit esteem, which was higher among placenta previa gathering. Regarding fetal hematocrit and placenta site, our examination demonstrated that there was high solid critical connection between the placental site and haematocrit esteem. **Conclusion:** Placental area can decide pregnancy outcome.

Keywords: Placenta, Placenta Previa (PP), hematocrit, neonate.

INTRODUCTION

The placenta is a materno-fetal organ, which starts creating at implantation of the blastocyte and is conveyed with the baby during childbirth. As the baby depends on the placenta for sustenance. Yet numerous other formatively basic capacities, the right advancement of the placenta is imperative to address embryonic and fetal improvement. To help support and keep up the pregnancy, the placenta should quickly grow at the same time with the fetus. The placenta is a transient organ which creates from the trophoblast of the embedding blastocyst. Maternal blood streams into the placental intervillous space, where solutes (supplements, oxygen) diffuse over the shipping epithelium to the fetal flow, while fetal metabolic waste items are expelled through the partition of courses controls solute transport and shield the baby from poisons. However, it shields the embryo from the maternal insusceptible framework. The placenta controls maternal physiology through the generation of hormones: human chorionic gonadotropin (hCG), human placental lactogen (hPL), estrogen and progesterone⁽¹⁾.

Placenta previa (PP) is characterized as the unusual implantation of placental tissue over or adjoining the inside cervical os. The commonness of PP is at around 5 for every 1000 pregnancies and it represents roughly 20% of all antepartum drain. Front PP was seen as related with unfavorable maternal results including over the top blood misfortune, gigantic transfusion, placenta accreta and hysterectomy⁽²⁾. 10% of all newborn children brought into the world after placenta previa are presented with extreme pallor. Furthermore, placenta previa is the most widely recognized placental irregularity causing neonatal

sickliness⁽³⁾. Together with pre-term birth, neonatal iron deficiency is a central point of the 4–8% danger of perinatal mortality in placenta previa patients⁽³⁾.

The newborns hematological parameters are not quite the same as those of newborn children or grown-ups, including contrasts as indicated by the course of birth, rope cinching time, blood tests (umbilical CB, venous blood, slim blood) withdrawn at 2, 12 or 24 hours after birth, healthful fetal conditions, and Hct estimation technique. Critical changes occur in the hematocrit from birth through the principal long stretches of postnatal life. It rises not long after birth, topping at 2 hours of age, and diminishes bit by bit after that. An expanded hematocrit (Hct) is related with hyper-thickness of blood and diminished blood stream to crucial tissues, particularly when the hematocrit increments to over 60%⁽⁴⁾. This study aimed to decide the connection between the site of placenta in pregnant ladies and the hematocrit (Hct) estimation of umbilical rope blood (CB) of the hatchling.

PATIENT AND METHODS

This case-control study was carried out at Obstetrics and Gynecology Department, Zagazig University Hospitals and El-Menshawey General Hospital in Tanta during the period from May 2018 to May 2019. Including 32 pregnant women with various placental site.

Ethical approval: The study was approved by the Research Ethics Committee of the Faculty of Medicine, Zagazig University. Written informed consent was obtained from each patient. The work was conducted for research involving humans according to the Code of



Ethics (Helsinki Declaration) of the World Medical Association.

Consideration criteria were: Women having placenta previa as (bunch I) classified as front or back placenta previa. Women without placenta previa at a similar gestational age as (bunch II). Placenta position was classified as foremost, back and fundal placenta. Neonates full term (37-multi week) with ordinary birth gauge (2.5-4.0 Kg).

Avoidance criteria were: Patients with different pregnancies, maternal foundational illness, complicated pregnancy, for example, intrauterine development hindrance, fetal abnormality, little for gestational age, diabetes mellitus, cardiovascular, respiratory, anxious, genitourinary ailments, and intense disease or history of interminable incendiary that were barred from the examination. In addition, patients prenatally determined to have placental insertion peculiarities or umbilical line abnormalities. **Avoidance criteria for the neonate** were strange partogram, perinatal blood misfortune, hydrops fetalis, birth asphyxia, low Apgar score < 8 at 5 moment and evident innate or chromosomal variations from the normal. Diagnostic work-up included complete history taking, especially for (Menstrual history, date of last menstrual period, duration of the present pregnancy in weeks, gravidity, equality, mode of conveyance). Obstetric inconveniences as pre-eclampsia and antepartum drain. Coronary illness and diabetes frailty. Fetal inconveniences as death, twins, I.U.G.R and oddities. Preoperative maternal hemoglobin (Hgb) and Hct levels. All patients were set up for medical procedure in some other setting and had preoperative assessment for the medical procedure wellness as standard research center examinations for CBC, liver and kidney capacity tests, coagulation profile, fasting and postprandial glucose and urine investigation.

For all women experiencing a third trimester, ultrasound check for placental restriction was done. Scans were performed utilizing (Medison CO_LTD unit, Sonoace x4, Korea) for ultrasonic assessment of the placenta. A detailed outputs including check for placenta morphology was performed. All patients with typical or irregular placental discoveries had another output quickly prenatally. The placenta area was recorded and named as foremost, back or fundal. Major placenta previa was analyzed when the placenta is covering the internal cervical os either mostly or totally and spent 28 weeks gestation. Placenta previa named total incomplete negligible and low-lying. Furthermore, it was delegated foremost placenta (characterized as placenta situated at the uterine cut site) or not. The finding of placenta previa depended on ultrasonography and affirmed at cesarean conveyance. Figuring of gestational age was controlled by the last menstrual periods and first-trimester ultrasound.

Method:

All women determined to have placenta previa experienced cesarean area conveyance, every patient must have at least two units of cross-coordinated blood prepared for utilization. Patients who were conceded at or

before 34 weeks growths got 6 mg of dexamethasone, 12 hourly for 48 hours. Management of PP is an elective cesarean area toward the fruition of 36-37 weeks' incubation. The detailed fetal inconveniences were fetal demise, admission to NICU, and rashness.

All women without placenta previa at the mean gestational age as (bunch II) experienced either ordinary vaginal conveyance or cesarean segment in view of repeated caesarian segment must be examined for breech introduction, maternal genital herpes or Cephalopelvic disparity. Maternal inconveniences were surveyed. The infants were inspected by neonatologist and evaluated deliberately for the presence of innate inconsistencies during childbirth, infant sex and Apgar score, birth weight, and necessity for neonatal escalated care. Following birth, and inside 15 seconds, two ml blood tests were collected from the umbilical vein by a syringe, and evacuated into a test tube containing EDTA as an anticoagulant and moved to the research center as quickly as time permits. Maternal venous blood tests were taken before activity and at any rate 6 hours after conveyance. Complete blood tally parameters were estimated utilizing the Coulter LH-780 hematology blood analyzer (Beckman Coulter Inc. Brea, CA, USA).

Statistical Analysis

The data were coded, entered and processed on computer using SPSS 22. Mean, standard deviation, range, frequency, and percentage were use as descriptive statistics. P value was considered significant when $P \leq 0.05$.

RESULT

There was non-significant difference between the studied groups as regards demographic data as shown in table (1). This study showed that placenta was fundal in 50% of cases, anterior in 31.25% and posterior in 18.75% of cases (Table 2).

There was high significant difference between the two studied groups as regards birth weight. While there was no significant difference between the two studied groups as regards gestational age, NICU admission and Newborn gender (Table 3).

There was significant difference between the studied groups regarding hemoglobin level before operation. In addition, there was high significant difference between the two studied groups concerning haemoglobin level after operation (Table 4). There was high significant difference between the placenta previa group and the control group as regards fetal haematocrit value (Table 5).

There was no significant relation between placental site and fetal outcome (Table 6).

There was significant difference between the studied groups regarding Apgar score at one minute. While there was high significant difference between the studied groups as regards Apgar score at five minute (Table 7). There was high strong significant correlation between the placental site and haematocrit value (Figure 1).

Table (1): Studying of demographic data in between the studied groups

Variable	Low-lying Placenta group (n=16)	Upper placenta (Control) (n=16)	t-test	P value
Age: (Years):				
Mean ± SD	32.5±4.5 (27-40)	30.4±5.2 (24-38)	1.22	0.231 (NS)
Range				
Number of C.S				
Median	1	2	MW	0.183 (NS)
Range	(1-2)	(0-2)	95	
Gravidity				
Median	2	2	MW	0.534 (NS)
Range	(1-4)	(1-5)	112	
Parity				
Median	1	2	MW	0.055 (NS)
Range	(0-3)	(1-4)	79	

MW =Mann whitney test P value is significant if < 0.05

Table (2): Distribution of controls according to placental location

	No.	%
Placental location:		
Upper Placenta	8	50.0
Anterior	5	31.25
Posterior	3	18.75

Table (3): Studying of fetal characteristics in between the studied groups

Variable	Placenta previa group (n=16)		Control (n=16)		t-test	P value
Gestational age: (weeks):						
Mean ± SD	36.1±1.2		36.5±1.2		0.94	0.35 (NS)
Birth weight: (kg)						
Mean ± SD	2.86±0.44		3.42±0.384		3.83	<0.001 (HS)
	No.	%	No.	%	χ ²	P value
Neoborn gender:						
Male	9	56.25	8	50.0	0.125	0.723 (NS)
Female	7	43.75	8	50.0		
NICU admission:						
Yes	3	18.75	0	0.0	Fisher test	0.225
No	13	81.25	16	100.0		

Table (4): Studying of maternal laboratory measures in between the studied groups

Variable	Placenta previa group (n=16)	Upper placenta (Control) (n=16)	t-test	P value
Haemoglobin before labor (g/dl):				
Mean ± SD	8.64±0.76	9.73±0.997	-3.5	<0.05 (S)
Haemoglobin after labor (g/dl):				
Mean ± SD	7.96±1.1	9.54±0.81	-4.4	<0.001 (HS)

Table (5): Relation between fetal haematocrit value and placental site

Variable	lacenta previa group (n=16)	Control (n=16)	t-test	P value
Fetal haematocrite value (%):				
Mean \pm SD	40.34 \pm 5.166	34.39 \pm 3.92	3.66	<0.001 (HS)

Table (6): Relation between upper placental site and fetal outcome

Variable	Fundal (n=8)	Anterior (n=5)	Posterior (n=3)	t-test	P value
Birth weight: (kg)					
Mean \pm SD	3.56 \pm 0.41	3.52 \pm 0.384	3.46 \pm 0.4	0.069	0.933
APGAR score 1minute					
Mean \pm SD	7.3 \pm 1.1	7.2 \pm 1.5	7 \pm 1.55	0.057	0.944
APGAR score 1minute					
Mean \pm SD	8.71 \pm 0.44	8.55 \pm 0.52	8.9 \pm 0.31	0.576	0.575

Table (7): Fetal APGAR score at 1 and 5 minutes

Variable	lacenta previa group (n=16)	Control (n=16)	t-test	P value
APGAR score at 1 minute				
Mean \pm SD	5.88 \pm 1.3	7 \pm 1.5	2.25	<0.05 (S)
APGAR score at 5 minute				
Mean \pm SD	6.88 \pm 1.5	8.81 \pm 0.54	4.85	<0.001 (HS)

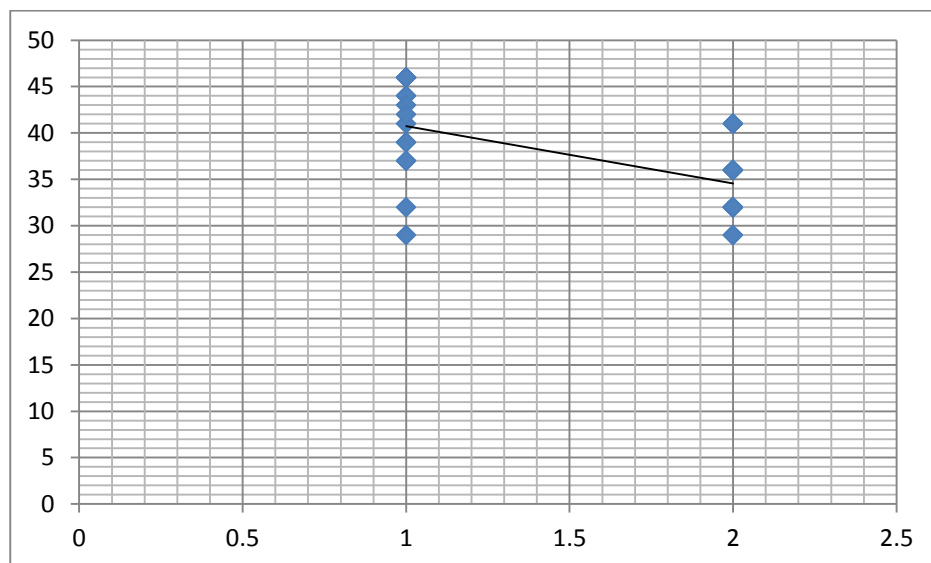


Figure (1): Correlation between placental site and haematocrit value

DISCUSSION

The placenta is a pivotal feto-maternal organ with both embryonic (chorion frondosum) and maternal (decidua basalis) parts. The advancement of the placenta starts with the implantation of the blastocyst into the maternal uterus and it advances all through the pregnancy. Toward the finish of the principal trimester of pregnancy, the maternal blood supply to the placenta is complete. The placenta has various and complex, formatively essential capacities, for example,

sustenance, discharge, and immunologic and Endocrine capacity⁽⁵⁾. In this way, an ordinary improvement of the placenta is significant for an uneventful embryonic and fetal advancement. Thus, the placenta variations from the norm can run from auxiliary peculiarities, to capacity issue, to site of implantation anomalies⁽⁵⁾. **Lal and Hibbard**⁽⁶⁾ showed that there were expanded in mortality in neonates destined to women with known placenta previa at term. Different agents, nevertheless, have reported no change in perinatal mortality⁽⁷⁾.

Different examinations uncovered no distinctions in development between control populaces without placenta previa and women with placenta previa⁽⁸⁾. As the pervasiveness of cesarean conveyance is rising, and along these lines, the plausibility of expanding quantities of ladies with placenta previa, it is imperative to obviously characterize the complexities, both maternal and neonatal, that are related with this determination. Past specialists contrasted their previa cases with the all-inclusive community, so it isn't astounding that stamped increments in inconveniences were noted⁽⁶⁾.

In the present investigation, there was non-huge distinction between the considered gatherings as respect statistic information including mean maternal age (32.5 ± 4.5 and 30.4 ± 5.2 years) separately, number of past C.S go (1-2) in placenta previa gathering and (0-1) in control gathering, gravidity extend (1-4) in placenta previa gathering and (1-5) in control gathering and equality run (1-2) in each gathering. **Daglar et al.**⁽⁴⁾ detailed in their planned case-control study performed in a tertiary level maternity medical clinic. Thirty-seven pregnant ladies determined to have front PP (study gathering) and 37 ladies without PP (control gathering) included into the investigation, so that there was no noteworthy contrast between his contemplated gatherings as respect statistic information including mean maternal age (32.7 ± 4.7 and 30.6 ± 5.1 years) individually, number of past C.S, gravidity and equality. **Alsammani et al.**⁽⁹⁾ who led a forthcoming enlightening investigation of 52 singleton pregnancies with PP at Sohag University Hospital, Egypt from January to June 2014. They found that the mean age (\pm SD), gravidity, equality, number of past cesarean conveyances (CD), and the normal number of ANC were 30.9 ± 3.68 years, 3.8 ± 3.84 conveyances, and 2.6 ± 1.1 , 2.15 ± 1.4 and 5.3 ± 1.3 visits separately. In an examination by **Lal and Hibbard**⁽⁶⁾ patients with placenta previa at the hour of conveyance were incorporated maternal and neonatal variable compared to the control gathering of women experiencing cesarean conveyance without previa. They found no distinction in gravity and equality between the two gatherings.

In the present examination, fundal placenta was in half cases, foremost in 31.25% and back in 18.75% of cases. These results are in concurrence with **Chhabra et al.**⁽¹⁰⁾ who led his investigations on 801 ladies, 200 (25%) had predominantly front placenta, 123 (15.4%) back, in 322 (40.2%) real part was fundal, and, the remainder of placenta was in the lower some portion of the uterus. **Zia**⁽¹¹⁾ reported that fundal placenta was the commonest then foremost then back placenta.

In the present investigation, there was no critical distinction between the contemplated gatherings as respect maternal anthropometric measures, mean weight was 75.4 ± 11.9 and 78.1 ± 14.2 kg, mean stature was 161.8 ± 5.4 and 161.7 ± 5.7 cm separately, and BMI was 28.8 ± 4.7 and 29.9 ± 5.7 in placenta previa and control respectively. **Daglar et al.**⁽⁴⁾ delineated that there was no critical distinction between the examined gatherings as

respect maternal anthropometric measures (weight, stature and BMI). **Alsammani et al.**⁽⁹⁾ found that mean stature of placenta previa moms was 157.1154 ± 7.18292 against. **Lal and Hibbard**⁽⁶⁾ found that pregnancy weight and BMI were essentially lower in the placenta previa gathering.

The present examination showed that there was high significant distinction between the two considered gatherings as respect birth weight and there was no noteworthy contrast between the two contemplated bunches as respect gestational age, NICU confirmation and newborn sex. This comes in steady with what was shown by **Daglar et al.**⁽⁴⁾ who expressed that there was no critical contrast between the two examined bunches as respect gestational age and newborn sexual orientation. There was distinction in the quantity of NICU confirmation, as there is a noteworthy contrast in the two considered gatherings. Additionally, **Lal and Hibbard**⁽⁶⁾ and **Nørgaard et al.**⁽¹²⁾ detailed that percent of NICU affirmation in placenta previa was 39.2% and 38.1%, separately. **Alsammani et al.**⁽⁹⁾ showed that solitary 17% of placenta previa infants were admitted to NICU. **Jang et al.**⁽²⁾ inferred that there was no huge distinction between the placenta previa and control bunch as respect fetal weight.

In our examination, there was huge distinction between the contemplated gatherings as respect hemoglobin level before activity. Additionally there was critical contrast between the two considered gatherings as respect hemoglobin level after activity. Our investigation demonstrated that there was high huge contrast between hemoglobin levels when activity in the placenta previa gathering. This is in concurrence with what expressed by **Daglar et al.**⁽⁴⁾ who outlined that there was no critical connection between the examined gatherings as respect hemoglobin level before activity. Likewise there was no noteworthy distinction between the two contemplated bunches as respect hemoglobin level after activity. **Jang et al.**⁽²⁾ revealed that there was no huge connection between the contemplated gatherings as respect hemoglobin level before activity. Additionally there was no noteworthy contrast between the two examined bunches as respect hemoglobin level after activity.

Our examination demonstrated that there was high noteworthy contrast between the placenta previa gathering and the control bunch as respect fetal haematocrit esteem, which was higher among placenta previa group. This is in concurrence with what expressed by **Daglar et al.**⁽⁴⁾ who reported that there was high critical distinction between the placenta previa gathering and the control bunch as respect fetal haematocrit esteem, which was higher among placenta previa gathering. **Lal and Hibbard**⁽⁶⁾ were against us as they discovered that there was high huge distinction between the placenta previa gathering and the control bunch regarding neonatal paleness, which was higher in placenta previa. **Chhabra et al.**⁽¹⁰⁾ inferred that hypertensive issue were 2.5% (5/200) with foremost,

20.5% (66/322) with fundal, and with back placenta 9.8% (12/123).

The present investigation showed that there was no noteworthy connection between placental site in charge gathering and fetal result. This is in concurrence with **Zia**⁽¹¹⁾ who expressed that there was no huge contrast in gestational age during childbirth, mean BW and Apgar scores.

In the present investigation 62.5% of placenta previa was foremost and 37.5% was back. This is against **Ibrahim and Farag**⁽¹³⁾ who led his investigation on 324 pregnant women 62 cases (19.13%) with front and 262 cases (80.87%) with back placenta previa.

Information spoke demonstrated that Apgar score at 1 min was 7.2 ± 1.5 and at 5 min 8.55 ± 0.52 in front placenta previa and at 1 min was 7.0 ± 1.55 and at 5 min 8.9 ± 0.31 in back placenta previa. This is in concurrence with **Ibrahim and Farag**⁽¹³⁾ found no huge contrasts in Apgar scores < 7 at 1 min and 5 min between the foremost and back placenta previa group. The present examination demonstrated that there was critical distinction between the two contemplated bunches as respect Apgar score at one moment. Likewise there was high critical contrast between the two contemplated bunches as respect Apgar score at five moment. **Daglar et al.**⁽⁴⁾ concur with the present examination that there was high critical distinction between placenta previa and control bunches as respect Apgar score at five moments. Additionally, **Lal and Hibbard**⁽⁶⁾ revealed that there was high huge contrast between placenta previa and control bunches as respect Apgar score at five moment. On the opposite side **Jang et al.**⁽²⁾ detailed that there was no noteworthy distinction between the placenta previa and control neonates as respect Apgar score < 4 in 1 and 5 minutes. **Matsubara et al.**⁽¹⁴⁾ saw that there was no noteworthy contrast between the examined gatherings as respect Apgar score at one and five minutes. Likewise, **Nørgaard et al.**⁽¹²⁾ revealed that there was no critical contrast between the placenta previa and control neonates as respect Apgar score 5 minutes < 7.

The result demonstrated that the most predominant intricacy was admission to NICU by a percent of 43.75% pursued by rashness by a percent of 12.5% then bladder damage by a percent of 6.25%. **Daglar et al.**⁽⁴⁾ concur with us when they represented in their investigation that there was high huge contrast between the two considered gatherings in respect to blood item use. However, they saw that there was noteworthy contrast between the two examined bunches as respect difficulties. **Lal and Hibbard**⁽⁶⁾ saw that that there was high noteworthy contrast between the two contemplated bunches as respect blood item use and complexities. **Alsammani et al.**⁽⁹⁾ watched huge increment in maternal inconveniences related with placenta previa incorporate cut off obstetric drain, maternal stun, blood transfusion crisis hysterectomy, disease and thrombophlebitis.

In this examination, there was no huge relationship between the fetal hemoglobin and

maternal hemoglobin. **Danish et al.**⁽⁴⁾ watched no huge relationship among moms and line blood hematological parameters.

CONCLUSION

Placental area can decide pregnancy outcome. Ultrasound imaging had turned into an indispensable segment of routine pre-birth medicinal consideration for most pregnant ladies. USG of placenta is fundamentally coordinated toward deciding the area of the placenta and distinguishing its variations from the norm in the later long stretches of pregnancy.

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